

REMARKS

In the present Amendment, the preamble of Claim 1 has been amended for further clarity by replacing the recitation “A method for designing a resin product” with the recitation “A method for obtaining resin product design parameters.” The preambles of Claims 2-12, which depend from Claim 1, have been amended accordingly.

No new matter has been added, and entry of the Amendment is respectfully requested. After entry of the Amendment, Claims 1-14 are pending.

In Paragraph No. 2 of the Office Action, Claims 1-14 were provisionally rejected on the ground of nonstatutory obviousness-type double patenting as allegedly being unpatentable over Claims 1-20 of copending Application No. 10/812,053.

Applicants have submitted herewith a Terminal Disclaimer to obviate the rejection.

In Paragraph No. 3 of the Office Action, Claims 1-14 were provisionally rejected on the ground of nonstatutory obviousness-type double patenting as allegedly being unpatentable over Claims 1-14 of copending Application No. 10/812,052.

Applicants have submitted herewith a Terminal Disclaimer to obviate the rejection.

In Paragraph No. 4 of the Office Action, Claims 1-12 were rejected under 35 U.S.C. § 101 as allegedly being directed to non-statutory subject matter.

Applicants respectfully traverse the rejection.

Applicants submit that the present claims recite a method of obtaining resin product design parameters (e.g., thickness, resin material) that are a useful, tangible and concrete result produced by the recited steps.

In view of the above, Applicants respectfully request reconsideration and withdrawal of the §101 rejection of Claims 1-12.

In Paragraph No. 6 of the Office Action, Claims 1 and 7-14 were rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over U.S. Published Patent App. No. 2003/0149498 (“Rebello”).

Applicants respectfully traverse the rejection.

Rebello does not disclose or render obvious the method for obtaining resin product design parameters, the method for producing a resin product, or the injection molding device according to the present claims.

Referring to the present specification at paragraph [0007], the recitation “specified shape” in Claim 1 includes the meaning, for example, “two-dimensional shape.” Further, the recitation “determining the design of said resin product” in Claim 1 includes, for example, determining the material and/or the thickness (three-dimensional shape) of the final molded product. See, e.g., the present specification at [0015].

Claim 1 recites a method for obtaining resin product design parameters of a resin product to be molded by injection molding, wherein a mold clamping force is obtained by an optimization method for a resin product having a specified (for example, two-dimensional) shape (by, for example, varying process and product design variables), wherein the design parameters of the resin product (such as, for example, the product design variables material type and thickness) may then be obtained based on the mold clamping force.

In other words, Applicants’ method does not simply determine injection molding parameters for a particular resin product. On the contrary, Applicants recite a method of

determining, for example, the three-dimensional shape and material type of a product that may have a variable thickness or be molded from a variable starting material.

The Examiner cites Rebello as disclosing a re-engineering of a part which may be injection molded. See Rebello at paragraph [0058]. Further, Rebello discloses various factors that must be considered and optimized in the re-engineering process such as clamping force. See Rebello at paragraph [0065] and [0074]. Moreover, Rebello discloses that these parameters are optimized if the engineering analysis data are unsatisfactory by “modifying the . . . model using a plurality of redesign goals, and repeating said performance of the engineering analysis after modifying the parametric master model.” See, Rebello at claim 12.

Thus, Rebello discloses a design process, whereby a molded part is optimized for manufacture by, for example, determining clamping force, in order to obtain a molded part which is the same or substantially similar to the original part. If Rebello did not teach a process for obtaining the same or substantially similar part to the original part, Rebello’s disclosure would render the re-engineered part useless. Put another way, if the re-engineered part is not the same shape or material, it might not function in the same manner.

Accordingly, while Rebello discloses that clamping force is a parameter in injection molding, Rebello is simply stating that for a particular re-engineered part the clamping pressure must be determined. Thus, Applicants’ method is not disclosed or fairly suggested by the disclosure of Rebello.

In view of the above, Applicants respectfully request reconsideration and withdrawal of the §103 rejection of Claims 1 and 7-14 based on Rebello.

In Paragraph No. 8 of the Office Action, Claims 2-14 were rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Rebello as applied to Claims 1 and 7-14

above, and further in view of U.S. Patent No. 6,558,605 ("Wilson") taken together with either U.S. Patent No. 6,096,088 ("Yu") or U.S. Patent No. 6,816,820 ("Friedl") in view of U.S. Patent No. 6,454,973 ("Norton").

Applicants respectfully traverse the rejection.

Rebello, Wilson, Yu, Friedl and Norton, alone or in combination, do not disclose or render obvious the method for obtaining resin product design parameters, the method for producing a resin product, or the injection molding device according to the present claims.

The Examiner cites Wilson as disclosing that the time sequence of gates in a molding process can be determined empirically, and that the sequence is based on a variety of factors such as cavity shape. However, Wilson does not suggest optimizing a timing sequence to lower the mold clamping force in order to change the resin material to be used or the thickness of the final product. Moreover, Wilson does not discuss optimizing mold clamp pressure. Similar to Rebello, Wilson is directed to molding a specific product with specific design parameters.

With respect to Yu, the Examiner asserts that Yu discloses determining optimum gate locations and processing conditions by simulating proposed shapes and injection points. Further, the Examiner asserts that Yu discloses that this simulation can predict the location of weld lines and air traps. The Examiner also cites Friedl as disclosing a method of determining the number and location of gates. However, Applicants submit that while Yu and Friedl may disclose optimum gate locations, Yu and Friedl are silent with respect to optimizing gate timing and mold claim pressure.

Further, the Examiner cites Norton as disclosing the importance of time-sequence valve gates in injection molding. See Norton at col. 1, lines 47-52. However, Norton does not discuss

how the design of a resin product (e.g., material and thickness) can be obtained based on the optimization of the inflow of resin material by valves opening/closing.

Accordingly, Rebello, Wilson, Yu and Norton, alone or in combination, fail to disclose or suggest a method of obtaining resin product design parameters as presently claimed.

According to the cited references (Rubello, Wilson, Yu and Friedl), (1) experience about an injection molding and (2) trial and error are needed to obtain optimized parameters. Further, when the number of gates becomes very large, it becomes difficult to obtain optimized parameters.

On the other hand, by the present recited invention, neither (1) experience about an injection molding nor (2) trial and error are needed to obtain optimized parameters. Moreover, even if the number of gates becomes very large, it is not difficult to obtain optimized parameters.

In view of the above, Applicants respectfully request reconsideration and withdrawal of the §103 rejection of Claims 2-14 based on Rebello, Wilson, Yu, Friedl and Norton.

Allowance of Claims 1-14 is respectfully requested.

If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

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Date: July 5, 2007